

Claim Status

1. (Original) A light modulator for modulating light from a source, said light modulator comprising:

5 at least one grating disposed to be illuminated by said light from said source,

said at least one grating being adapted to be movable among a set of discrete positions, and

10 a MEMS actuator adapted for moving said at least one grating to a selected position among said set of discrete positions, to direct light of a selected wavelength diffracted by said grating into a selected direction.

15 2. (Original) A spatial light modulator comprising a multiplicity of light modulators according to claim 1.

3. (Original) A light source comprising at least one light modulator according to claim 1.

20 4. (Original) A display device comprising a multiplicity of light modulators according to claim 1, arranged in an array.

25 5. (Original) The light modulator of claim 1, wherein said at least one grating comprises at least one grating having a multiplicity of parallel grooves, said grating being adapted to be tilted about an axis parallel to said grooves.

30 6. (Original) The light modulator of claim 5, wherein said at least one grating is adapted to be tilted to a selected angle among a set of discrete angles relative to said light from said source.

7. (Original) The light modulator of claim 5, wherein said at least one grating comprises a multiplicity of gratings.

8. (Original) A spatial light modulator according to claim 7, wherein said multiplicity of gratings is arranged in an array.

9. (Original) The light modulator of claim 1, wherein said at least one grating comprises at least one grating having a multiplicity of parallel grooves, said grating being blazed to diffract said selected wavelength into a selected diffraction order.

10. (Original) A spatial light modulator comprising a multiplicity of light modulators according to claim 9, arranged in an array.

11. (Original) The light modulator of claim 1, wherein said at least one grating comprises at least one grating having a multiplicity of parallel grooves in a plane, said grating being adapted to be movable substantially parallel to said plane.

15 12. (Original) The light modulator of claim 11, wherein said grating is adapted to be movable by translation along an axis substantially parallel to said plane.

20 13. (Original) The light modulator of claim 11, wherein said at least one grating comprises at least one grating having a multiplicity of parallel grooves, said grating being blazed to diffract said selected wavelength into a selected diffraction order.

25 14. (Original) The light modulator of claim 13, comprising three or more blazed gratings, each blazed for a different wavelength.

15. (Original) The light modulator of claim 14, wherein said three or more blazed gratings, are blazed for wavelengths corresponding to red, green, and blue light.

30 16. (Original) A spatial light modulator comprising a multiplicity of light modulators according to claim 13, arranged in an array.

Claims 17-24 (Cancelled)

25. (Original) A light modulator for modulating light from a source, said light modulator comprising:

a blazed grating disposed to be illuminated by said light from said source, and

5 a MEMS thermal actuator adapted for tilting said grating continuously through a range of angles relative to said light from said source, to direct light of a selected wavelength diffracted by said grating into a selected direction.

10 26. (Original) The light modulator of claim 25, wherein the MEMS thermal actuator is adapted for tilting the blazed grating to three or more predetermined discrete angles to selectively direct light of three or more predetermined wavelengths diffracted by the blazed grating into a selected direction.

15 27. (Original) The light modulator of claim 25, wherein the blazed grating is adapted to be tilted about an axis and wherein the MEMS thermal actuator comprises two thermal actuating elements disposed on opposite sides of said axis, each of the two thermal actuating elements being adapted for tilting the blazed grating about said axis.

20 28. (Original) The light modulator of claim 25, wherein the MEMS thermal actuator comprises a pre-shaped monomorphic thermal actuator.

25 29. (Original) The light modulator of claim 28, wherein the MEMS thermal actuator is formed by the steps of: forming silicon oxide on a region of a silicon substrate, covering the silicon oxide with a layer of polysilicon, and removing the silicon oxide.

30 30. (Original) The light modulator of claim 25, wherein the MEMS thermal actuator comprises a cantilevered thermal lift arm.

31. (Original) The light modulator of claim 30, wherein the cantilevered thermal lift arm comprises a plurality of segments, each segment thereof comprising a heater material and two materials having unequal thermal expansion coefficients.

32. (Original) A spatial light modulator comprising a multiplicity of light modulators according to claim 25, arranged in an array.

5 33. (Original) A display device comprising a multiplicity of light modulators according to claim 25, arranged in an array.

34. (Original) A light modulator for modulating light from a source, said light modulator comprising:

10 at least one means for diffracting said light from said source, said at least one means for diffracting being disposed to be illuminated by said light from said source and being adapted to be movable among a set of positions, and

15 microelectromechanical means for actuating, adapted for moving said at least one means for diffracting to a selected position, to direct light of a selected wavelength into a selected direction.

Claims 35-42 (Cancelled).